

**Beaufort Sea Oil and Gas Development  
Northstar EIS Project**

***Public Scoping Meeting***

**Kaktovik**

**1996**

BEAUFORT SEA OIL AND GAS DEVELOPMENT/  
NORTHSTAR ENVIRONMENTAL IMPACT STATEMENT PROJECT

PUBLIC SCOPING MEETING

Tuesday, March 26, 1996, 8:00 p.m.

Kaktovik, Alaska

**Alaska Stenotype Reporters**

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Public Scoping Meeting - Kaktovik

PARTICIPANTS

BP Exploration (Alaska), Inc.:

Gary Campbell

Cindy Bailey

Chris Herlugson

Peter Hanley

Dames & Moore EIS Preparation Team:

Gary Hayward

Kim Morris

Jon Isaacs

Steve Braund

LEAD AGENCY

U.S. Army Engineer District, Alaska:

Tim Jennings

Terry Carpenter

COOPERATING AGENCIES

North Slope Borough:

Tom Lohman (not present)

U.S. Environmental Protection Agency:

Ted Rockwell

U.S. Minerals Management Service:

Paul Lowry

U.S. Fish and Wildlife Service:

Lori Quakenbush (not present)

U.S. National Marine Fisheries Service:

Jeanne Hanson

Translator: Elsie Crow

Reported by: Karen Ford

Alaska Stenotype Reporters

1 Tuesday, March 26, 1996, Kaktovik, Alaska, 8:00 p.m.

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TIM JENNINGS: Good evening and thank you for coming. My name is Tim Jennings and I am with the Corps of Engineers. We appreciate you taking the time out of your busy schedule to come and attend this meeting tonight.

This is a scoping meeting. I believe that most of you have seen our newsletter that we sent to everyone regarding the Beaufort Sea oil and gas development, and in particular BP's proposed Northstar project.

The BP's Northstar project and oil and gas development in the Beaufort Sea has led to the Corps of Engineers as the lead federal agency to prepare an Environmental Impact Statement.

Also here from the Corps of Engineers is Terry Carpenter. Terry, would you stand. Terry is the project manager for the Corps of Engineers on this project.

Also as a cooperating agency with us in this effort is the North Slope Borough. Unfortunately the plane from Barrow couldn't get here tonight. So Tom Lohman from the Borough who is on the EIS team, and there were other Borough representatives that were also coming from Barrow, unfortunately, because of the weather, they are not here.

The Borough as a cooperative agency is on the EIS team and it's important, at least from our perspective,

1 that the Borough is a partner with us in this EIS effort,  
2 because one of the primary goals of this EIS is to  
3 incorporate the traditional and local knowledge into the  
4 EIS process.

5 Also part of the EIS team are other federal  
6 agencies, and we have representatives from the National  
7 Marine Fisheries Service here tonight, Jeanne Hanson; and  
8 from the Minerals Management Service is Paul Lowry; from  
9 the Environmental Protection Agency is Ted Rockwell; and  
10 our last cooperating agency is the U.S. Fish and Wildlife  
11 Service. Lori Quakenbush is not here tonight. She is in  
12 the Fairbanks office and wasn't able to attend.

13 Also with the EIS team are a couple of folks you  
14 might recognize from working with the Borough in the past  
15 and with the city of Kaktovik, Steve Braund and Jon Isaacs.  
16 They both, as you probably know, have worked closely with  
17 the Borough on various projects like coastal management  
18 planning and such. Because of the importance of  
19 incorporating traditional and local knowledge into the  
20 process, Steve and Jon will be back in the next few weeks  
21 with a follow-up visit to follow on to this meeting and to  
22 discuss with you further any issues and concerns regarding  
23 this project and oil and gas development in the Beaufort  
24 Sea.

25 Also tonight Elsie Crow is here as our

1 translator. We want to thank Elsie for being here.

2 Apparently everyone in Kaktovik knows Elsie. It is her  
3 first trip here and so she is happy to be here.

4 I would also like to recognize Emily Wilson of  
5 the Borough out of Barrow who did the translation for us on  
6 the newsletter.

7 Tonight's meeting, as I mentioned at the  
8 beginning, is to obtain your comments and input into this  
9 EIS process for the Beaufort Sea oil and gas development  
10 and the Northstar project. This is a scoping project. We  
11 are at the very beginning of the process and we are here to  
12 ask your help to help us frame the key issues for  
13 development if it were to go forward in the Beaufort Sea;  
14 what kind of options for development should we be looking  
15 at, what kind of potential impact and concerns we have in  
16 this regard.

17 For the format for tonight's meeting, first Gary  
18 Campbell of BP will present a brief overview of the  
19 Northstar project and some of the design options that they  
20 are looking at for the project and any types of plans,  
21 studies or work they may have related to the project.

22 Following that short presentation will be Gary  
23 Hayward from Dames & Moore. Dames & Moore is an  
24 engineering and consulting company out of Anchorage that is  
25 in charge of putting together the EIS for the agencies.

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1 Gary will describe briefly the EIS process, and in  
2 particular the public scoping and public input process,  
3 where we are now, and certain key milestones in the future.

4 Then after those two presentations we will ask  
5 for your input and comments to us regarding the project and  
6 Beaufort Sea oil and gas development.

7 Okay. So with that, Gary Campbell.

8 GARY CAMPBELL: Thank you very much for coming  
9 tonight. On behalf of BP, I extend thanks, as well as my  
10 personal thanks for being here.

11 BP is very interested in the Northstar  
12 development, primarily as a way of replacing declining  
13 production reserves at Prudhoe Bay and Endicott.

14 Northstar, the Northstar project, is located  
15 about six miles offshore, almost directly out from Point  
16 Storkersen outside the barrier islands. Part of the unit  
17 is within state leases. There are two federal leases that  
18 are also included, and the entire project would be inside  
19 North Slope Borough jurisdiction.

20 This will represent our first offshore  
21 production that would not be connected by a causeway.  
22 Endicott is effectively offshore but is connected to the  
23 coast by a causeway bridge system. Northstar, the way we  
24 are currently looking at it, one of the options is to put a  
25 structure out about six miles with a buried pipeline back

1 to shore.

2           There are several key issues that are part of  
3 the design in the approach to Northstar. The first is  
4 structures. We are looking at CIDS, which some of you, I  
5 am sure, are familiar with, that concrete island drilling  
6 structure with the rig that is located offshore from Point  
7 Storkersen. We looked at Molikpaq, which is a similar type  
8 drilling rig in the Canadian Beaufort. We looked at  
9 several others, and we are also looking at the possibility  
10 of expanding the Seal Island location, which is right here.  
11 It's large enough to put production facilities and drilling  
12 equipment.

13           Facility location, as to where the oil and gas  
14 would be processed, is another concern, one of the key  
15 issues, and it can be categorized two ways, whether the  
16 facilities are offshore or whether we take advantage of  
17 existing infrastructure onshore at one of the current  
18 producing assets, like Prudhoe Bay, Endicott or Milne  
19 Point. So we are looking at the combination of using  
20 existing and new, or the possibility of all new facilities.  
21 Production rates, we are targeting in the order of 50,000  
22 barrels of oil per day.

23           Pipeline from the structure to shoreline, we are  
24 looking at several different alternative routes. Starting  
25 from Seal Island, we have a route that follows the barrier



1 islands over to Back Point or Beechy Point going into Milne  
2 facilities. We are looking at alternates going straight in  
3 to Storkersen Point, into Prudhoe Bay or Lisburne  
4 facilities. We are looking at a route that goes over to  
5 West Dock. Actually there are two routes that we are  
6 looking at for West Dock. We are also looking at the  
7 possibility of going all the way over to Endicott. Those  
8 are the primary pipeline option routes that we are looking  
9 at right now.

10 Construction techniques for the pipeline, as  
11 some of you are aware, we have a test trench program going  
12 on right now where we are looking at how best to lay  
13 pipeline from shore to the offshore structure. We are  
14 looking at putting two pipelines in, a 12-inch oil line and  
15 an 8-inch gas NGL line from shore.

16 The test trench that we are working with, we  
17 have had two sites, one inside the barrier islands that is  
18 ground-fast ice, so it is a very traditional, conventional  
19 onshore technique for backhoe and digging the pipeline  
20 trench. Offshore it would be on floating ice with a slot  
21 cut in the ice and a backhoe reaching down to dig a trench  
22 to the 10-foot range, with select backfill on top of the  
23 pipes and then native soils put back over the top of the  
24 trench.

25 That is the engineering work we have completed,

1 conceptual engineering, which is where we determined the  
2 number of options and alternatives that I have described  
3 tonight. We are now starting what we call preliminary  
4 engineering which starts to take a look at the effects of  
5 all of those different alternatives compared to each other.  
6 And also at this point, although we seem to be sometimes  
7 one step ahead or one step behind the EIS process here, we  
8 are trying to get synchronized with the work that is going  
9 on in the EIS process so it's parallel to, as much as  
10 possible, the work that we are doing on the design side  
11 from BP's perspective.

12           There are three design criteria issues that --  
13 Cindy Bailey and I, when we were in Nuiqsut last May  
14 talking to the village there, there were three issues that  
15 came up that we have incorporated into our design so far.

16           The number one was no gravel bags for the slope  
17 protection around the structure. There was concern that  
18 the bags rip and float and get caught in boats. So we have  
19 moved away from that and are going to use concrete,  
20 interlocked concrete matting.

21           A second issue was noise. We are looking at  
22 only low-noise type equipment to reduce the impact of noise  
23 from the structure.

24           And the third one was color, something we hadn't  
25 thought of. But there was an interest in what color the

1 facilities should be so that they would blend naturally  
2 with the environment. And that's something we still need  
3 to work through before we finalize design.

4 And the last thing I want to mention is we have  
5 not applied for any major permits, and we will not be doing  
6 that at least until after the scoping meetings. We want  
7 your input before we make any decisions on what our  
8 applications should look like. And BP is acting as a  
9 cooperating applicant in this whole process. We feel the  
10 EIS is important, we feel that these meetings are  
11 important, and we want to cooperate and work with the  
12 agencies and with the villages through this whole process.

13 Thank you very much.

14 GARY HAYWARD: I am Gary Hayward from Dames &  
15 Moore's Anchorage office and the project manager for the  
16 EIS for this effort.

17 In addition to the agencies involved and BP, who  
18 are here tonight, we have assembled a team of experts who  
19 are familiar with the North Slope environment and oil  
20 development issues, and they are here to assist us in the  
21 development of this EIS.

22 I am sure that many of you have already received  
23 a newsletter regarding this project which was mailed to  
24 most of you, or have seen the posters or heard  
25 announcements on television or radio regarding tonight's

1 meeting. We are in the very early stages of the EIS  
2 development, a stage called public scoping, and this  
3 meeting is the first of a series of public scoping meetings  
4 regarding this effort.

5           The purpose of this meeting is to provide you  
6 with the initial information regarding the Northstar  
7 project and oil development in the Beaufort Sea in general.  
8 The purpose is also to provide you with an opportunity to  
9 raise issues or voice your concerns regarding oil  
10 development, including traditional Native knowledge and  
11 experience as relates to subsistence, ice and weather  
12 factors and other resources of concern to you.

13           It is important to remember that this will be  
14 the first oil development project in the Beaufort Sea.  
15 Several aspects of oil development are different than oil  
16 exploration, which has been conducted in the past. Some of  
17 these different aspects include year-round operations, more  
18 helicopter and vessel traffic, and oil transportation to  
19 shore-based facilities.

20           Although BP presented what they are proposing  
21 for the Northstar development, the EIS process requires  
22 that a range of reasonable alternatives be also analyzed.  
23 Some of these include different oil production structures,  
24 other than a gravel island, and different modes of oil  
25 transportation to shore other than buried pipelines.

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1           We are going to format this EIS in a different  
2 manner than previous EISs you may have seen. We are going  
3 to make every effort to make it a more user-friendly  
4 document and make it easier for you to find where your  
5 comments have been incorporated and addressed. And we are  
6 going to have separate sections devoted to traditional  
7 Native knowledge and experience with an easier format for  
8 you to follow and understand.

9           In addition to the scoping meetings, we are also  
10 planning a series of follow-up meetings in the next few  
11 weeks to assist members of our team, or with selected  
12 members of our team and citizens of Barrow, Kaktovik and  
13 Nuiqsut to help gather additional information and  
14 traditional Native knowledge and experience, and that  
15 information will be incorporated into the EIS process.

16           There will also be a series of follow-up  
17 newsletters over the upcoming months, as well as more  
18 formal public hearings after the draft EIS has been issued,  
19 which will provide you with an opportunity to comment  
20 further on this proposed project.

21           Again, we are very early in the scoping process.  
22 We may not have the answers to all your questions here  
23 tonight. The primary goal is to receive your comments and  
24 receive your concerns, and we will make every effort that  
25 they are presented and addressed in the EIS document.

1           TIM JENNINGS: Okay. We would like to begin the  
2 comments and testimony part. We would like this to be  
3 informal. Whatever you feel comfortable with, if you would  
4 like to stay seated, if you would like to stand, if you  
5 would like to come forward. We ask you that you speak loud  
6 enough so that we can have our court reporter get your  
7 testimony taken down and so that the tape recording can  
8 also pick up your voice.

9           We would like you to state your name, if you  
10 would, and also, by way of background, any information  
11 about yourself so that also can be in the record.

12           Because this is the first potential offshore  
13 development, as was mentioned, and it may be  
14 precedent-setting, we will ask that you comment on BP's  
15 project for the Northstar development, but also broad-base  
16 comments regarding oil and gas development in the Beaufort  
17 Sea in general. So you do not have to necessarily limit  
18 your comments to the BP project.

19           Also, the agencies here, including the North  
20 Slope Borough, in this EIS project we are neutral. We are  
21 neither for the project or against the project. We have  
22 not made any decisions in terms of permitting yet. That  
23 comes at the very end of the process. So I wanted to let  
24 you know how we are taking your information and putting it  
25 into the process as neutral and disinterested agencies in

1 terms of not being for or against.

2 We invite anyone to begin the testimony. If  
3 there are elders who would like to speak first or, if not,  
4 then anyone may begin the testimony.

5 ISAAC AKOOTCHOOK: My name is Isaac Akootchook.  
6 I am a Kaktovik resident. And I am born up here, still  
7 here.

8 We have a lot of concern about how things will  
9 work, but we believe you guys are going to do it.

10 And my first question is how deep is that sea  
11 land?

12 GARY CAMPBELL: It's forty feet of water.

13 TIM JENNINGS: Approximately 40 feet of water.

14 ISAAC AKOOTCHOOK: And they are going to make a  
15 big island out there?

16 GARY CAMPBELL: 450 by 550 is the current  
17 thought. 450 feet by 550 feet, or about five acres, is the  
18 current thinking.

19 TIM JENNINGS: There is already an island in  
20 place. I don't know -- how large is the island?

21 GARY CAMPBELL: Not much more than an acre.

22 TIM JENNINGS: There is about an acre already  
23 there.

24 ISAAC AKOOTCHOOK: Again, my question again is  
25 how about the water and the bottom floor, how deep from

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that floor down to the pipeline running?

2           GARY CAMPBELL: We are currently designing for  
3   ten feet below the seabed. So it would be the water, the  
4   seabed, and then ten feet below that for the pipeline.

5           ISAAC AKOOTCHOOK: And they have a study on the  
6   ice piling there or is it smooth, it really never moves  
7   much in that area?

8           GARY CAMPBELL: We have some studies. In fact  
9   this map represents some of that information. But we are  
10  also interested in gathering what information you have in  
11  terms of the ice movement and just how much ice affects the  
12  bottom of the ocean in that area.

13          ISAAC AKOOTCHOOK: Well, maybe later on  
14  something will come up and I will have more.

15          Yeah, we would like to see that. You see, this  
16  is a different meeting, when we have usually meetings, you  
17  know. Every time we have a comment and testimony here, we  
18  never see any paper though. But this time I heard about  
19  it, you are going to put in the papers and what we speak to  
20  you about it and, again, from you, too.

21          And maybe later on I will bring up something  
22  again. Thank you.

23          TIM JENNINGS: Thank you, sir.

24          FENTON REXFORD: My name is Fenton Rexford,  
25  R-e-x-f-o-r-d. I am the president of KIC, the Kaktovik



Inupiat Corporation.

2                   I have a couple of questions I'd like to see if  
3   you can answer this evening. But before I ask a question,  
4   I would like to point out an issue. I see in the  
5   newsletter that you are going to include effects to  
6   subsistence resources and activities, whales and marine  
7   mammals. We know there are a lot of waterfowl that comes  
8   from all over the world that go through this area. I don't  
9   see anything to that effect, and this here only talks about  
10  marine mammals. So that is one of my, one of the issues I  
11  would like to see in here. They come from all over the  
12  world for only a three-month period, and if there is an oil  
13  spill, that would have a drastic affect on the population  
14  of the migrating animals, be it the marine mammals or the  
15  waterfowl.

16                  The other question I have is on the middle of  
17  the paragraph on Page 2. In the middle part of the column  
18  there there is a big blank before "engineering  
19  considerations." What was left out of there, was deleted?

20                  GARY HAYWARD: Actually nothing was deleted. It  
21  was a process of the way the columns were justified at the  
22  right.

23                  FENTON REXFORD: Okay. When I looked at  
24  considerations, a lot could fit in there. It could be cold  
25  weather engineering, cold arctic engineering, maybe...

Okay. Thank you.

2                   We all know that you want to start  
3 traditional -- traditional knowledge of the area, its  
4 resources, and how these resources may be affected by the  
5 oil and gas development will be an important part of the  
6 EIS decision-making process, that is, the traditional  
7 knowledge of the area. This effort will also seek out and  
8 incorporate traditional Native Alaskan knowledge and  
9 experience regarding the assessment of potential  
10 environmental consequences of the development and  
11 production activities.

12                   How are you going to incorporate it? How -- can  
13 you describe how you are going to incorporate that, or when  
14 and how and what?

15                   GARY HAYWARD: It's a combination of things. I  
16 would like some input from you folks as to how best to get  
17 that information to us from you. And in addition to that  
18 we are also going to have Jon Isaacs and Steve Braund come  
19 back to Barrow, Kaktovik and Nuiqsut at a series of  
20 meetings later on to meet with certain individuals within  
21 the villages and to do just exactly that, get your Native  
22 knowledge and experience and get it to where we can get it  
23 in a format that we can then incorporate it into the EIS.

24                   We will have separate sections in the document  
25 that address Native knowledge and traditional knowledge and

1 Native experience in a wide range of portions of the  
2 document. Maybe Jon or Steve can explain a little bit more  
3 about what they see their role as in this effort as well.

4 STEVE BRAUND: My name is Steve Braund.

5 What we thought we would do is come back after  
6 we contact the city council and the appropriate  
7 organizations and set up a meeting with the whalers and  
8 hunters and talk to people about their concerns. More  
9 specific than just resources, which resources, where and  
10 when they might be impacted, and at the same time, as  
11 appropriate, gather information regarding ice conditions,  
12 currents, different migration patterns.

13 And it's kind of a moving target right now how  
14 we are going to incorporate that into the EIS because there  
15 are a lot of agencies involved and I don't think we've  
16 worked all of that out, but we plan on gathering that  
17 information, bringing back appropriate scientists as  
18 necessary, and putting a section in on each of the  
19 different topics based on the local information that we  
20 get.

21 TIM JENNINGS: A suggestion that we received  
22 last night in Barrow that we are going to look into is the  
23 comment was made that there has been a series of these  
24 meetings on various topics, oil and gas lease sales over  
25 the past 10, 15, 20 years where repeatedly locals have

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given lots of testimony. And so there is a wealth of  
2 information already out there that someone suggested we go  
3 and take a look at and try and synthesize, to summarize, as  
4 well as to follow up, as we've mentioned. So that's a  
5 possibility that we are going to look into, is to take  
6 advantage of all the previous testimony that various folks  
7 have already given.

8 GARY CAMPBELL: I might add, too -- this is Gary  
9 Campbell with BP -- the examples that I used when I  
10 described the project a bit from our visit with the village  
11 of Nuiqsut, and that is not to use the fabric bags for  
12 gravel, gravel bag protection around an island, because of  
13 the potential of them tearing and floating and getting  
caught in propellers.

15 What BP wants to do is understand your concerns  
16 and use that as part of how we design the whole project so  
17 that we avoid like gravel bags, or we plan for low-noise  
18 equipment so that it has minimal impact, and we plan to  
19 work with you on the colors that best fit the environment.

20 So we would like to take your suggestions and  
21 include that as we design the project.

22 FENTON REXFORD: That would be in writing, be  
23 part of the mitigation measures then for what you are  
24 saying right now?

25 GARY CAMPBELL: We want to take all the ideas

and incorporate them so that we have that information as we  
2 are designing the project.

3 JON ISAACS: My name is Jon Isaacs. If I can  
4 add to what Gary said.

5 I think in the past, like Tim said, there has  
6 been lots of meetings in which you have talked about what  
7 your concerns are. These aren't new, you've been saying  
8 them for a long time. I think maybe what hasn't happened  
9 is working with you and asking what should be a mitigation  
10 measure, what you think is going to happen, how should it  
11 be designed and can be designed, and to ask you some of  
12 those questions and have you participate in this in making  
13 some of those comments.

14 FENTON REXFORD: Thank you.

15 Okay, I'll be like Isaac. I have a couple more  
16 items in here that I want to ask you.

17 But I think representing the 112 shareholders,  
18 the Inupiat shareholders here in Kaktovik are adamantly  
19 against offshore production until there is proven  
20 technology of a cleanup of an oil spill under ice-infested  
21 waters. It wasn't quite proven yet on onshore even. The  
22 oil spill training, the experiments, we have still yet to  
23 be satisfied on the cleanup of an oil spill even on land.  
24 We have had several examples or tests done. We are not all  
5 satisfied even on the onshore oil spill cleanup exercises.

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I mean the ice-infested water, we all are against until  
2 there is proven technology of a cleanup in the ice.

3 And under ice, different seasons of the ice  
4 breakups, those kind of things will have a very bad effect  
5 on the wildlife population of the offshore. Not only  
6 offshore. We also get migrating caribou that come into the  
7 ocean for a salt lick. They have come from a long  
8 migration route and they are deficient in minerals. They  
9 go down to the ocean in little lagoons and lick the salt,  
10 the salty ice, so I know that happens. So I just wanted to  
11 make that as a public comment to say that oil spill  
12 response has to be proven technology before oil production  
13 happens.

Okay. Thank you.

15 TIM JENNINGS: Thank you, Mr. Rexford. If you  
16 have comments that you want to come back with later on,  
17 this is informal, so if you think of something later on in  
18 the meeting, you can have another opportunity.

19 Who wants to be next? I am sure there are  
20 others that want to provide some comments tonight.

21 HERMAN AISHANNA: My name is Herman Aishanna. I  
22 am the vice mayor of the city, also chairman of the KIC  
23 board.

24 Obviously you guys have chosen the buried pipe.  
? Have you considered any alternatives besides that?

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TIM JENNINGS: The buried pipe may be BP's test case right now or their preferred alternative from the agency team perspective. We have not decided that the buried pipeline is the preferred alternative. We will be looking at a whole range of options for bringing that oil to either shore or to a refinery. It could mean barging, was one option that we have talked about. There could be some trade-offs, of course, in terms of different methods could result in a different set of impacts that would be considered.

But for now the test case is buried pipeline. We had a comment from someone in Barrow last night asking again about why not build a gravel road, a gravel causeway out there. That way it would minimize the potential for oil spill, because that was viewed as, I believe, a more proven technology. And I believe it's due to the water depth and the distance offshore that makes that option rather -- it's very expensive.

GARY CAMPBELL: Yes, it's very difficult. Also the concern then turns to fish migration. With a structure out in the water six miles, what effect that would have on fish migration. So there are a lot of alternatives to look at.

HERMAN AISHANNA: That causeway is not very good, not for the fish. Maybe something like a Golden Gate

1 Bridge style, drive out there on sea land.

2 GARY HAYWARD: Actually the EIS process will  
3 require a wide range of alternatives to be looked at for  
4 getting the oil to shore, and barging, causeways, a series  
5 of tankering options, oil storage out there and maybe  
6 transport to shore on a seasonal basis. There would be a  
7 wide range of options in the development of the EIS. And a  
8 causeway, I mean a Golden Gate Bridge scenario isn't one  
9 that we've thought about yet, but a trestle is one that we  
10 could look at.

11 HERMAN AISHANNA: And another question, if you  
12 are going to do some resupply, are you going to use the  
13 barge system or you are going to do it in the wintertime?  
14 I am also a whaling captain, you know, and those tugs make  
15 a lot of noise in the summertime.

16 GARY CAMPBELL: There will probably be several  
17 forms. We will use like helicopter for some times of the  
18 year, barging is one of the plans, and also ice roads in  
19 the winter, so...

20 HERMAN AISHANNA: Fuel supply is what I am  
21 concerned about.

22 GARY CAMPBELL: Hopefully we will be able to use  
23 gas production from the island as fuel at the island, so  
24 transporting like diesel would probably be pretty minimal.  
25 So a lot of the gas would be produced and used as fuel



right on the island.

2 HERMAN AISHANNA: Also what is the -- you are  
3 making a pipeline. What diameter are we talking about?

4 GARY CAMPBELL: A 12-inch pipeline for the oil  
5 line and about an 8-inch --

6 HERMAN AISHANNA: What is it made of?

7 GARY CAMPBELL: Half-inch steel.

8 HERMAN AISHANNA: Just straight steel?

9 GARY CAMPBELL: Yes. I think it's an X-65 grade  
10 so it's a high grade --

11 HERMAN AISHANNA: It's not coated or anything?

12 GARY CAMPBELL: It will be coated on the  
13 outside, yes.

14 JON ISAACS: I would like to point out that one  
15 part of our team is Chris Clark, who has been working with  
16 the Borough on studies of whales, and we recognize noise  
17 effects on whales is one of the biggest issues and concerns  
18 that we have, too.

19 HERMAN AISHANNA: Once it's here, once it's  
20 built, you have got to build it to be there for around 20  
21 years, we have to deal with it.

22 I think that's all.

23 TIM JENNINGS: Thank you for your comments.

24 SUSAN AKOOTCHOOK: My name is Susie Akootchook.

?5 I was born and raised here in Kaktovik. I have some

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questions, and also, along with my questions, some  
2 comments.

3 But I would like to comment on the noise. I  
4 worked with the whale census and worked with Chris Clark  
5 that time they did the whale census over at Barrow. And I  
6 was with the acoustic crew listening in with speakerphones  
7 and those microphones were like about a hundred, 75 to 50  
8 feet under.

9 And if you guys are planning on using your  
10 choppers, there is going to be a lot of noise. One time I  
11 was on ship and I had the headsets on and then heard an  
12 airplane, mind you, from under the water, listening in. I  
13 can hear an airplane flying over. From that end of the  
14 mike to that end of the mike, I could hear it all the way  
15 clear. And when I went out there and checked, it was way  
16 up there. And that noise, whether you use choppers or  
17 airplanes, it's going to be disruptive noisewise.

18 And also what kind of studies have you done on  
19 whales, do they migrate there, and what other sea mammals  
20 migrate through there, that area you're interested in?

21 And development out there, how many years do you  
22 plan on having it out there? How long will that drilling  
23 rig be out there? It is not just going to be an  
24 exploratory, actually drilling for oil. How many years  
5 will it be there?

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1 GARY CAMPBELL: I would expect that -- we expect  
2 the life of the field to be about 20 years. There will be  
3 a lot of drilling activity the first four or five years  
4 primarily and then there would be sporadic drilling  
5 activity for working over wells, but it would be there  
6 effectively for the 20 years.

7 SUSIE AKOOTCHOOK: And how close is one of the  
8 barrier islands from Northstar?

9 GARY CAMPBELL: The closest barrier island is  
10 about three miles. We are almost to the edge of the  
11 three-mile limit. That's Seal Island. It's not shown on  
12 this map, but the three-mile limit is about out here, so we  
13 are almost right at the three-mile limit at Northstar. So  
14 Stump Island is probably the closest in there, which is  
15 about three miles.

16 SUSIE AKOOTCHOOK: Will there be impact monies  
17 going to the communities that are going to be impacted, the  
18 whaling villages?

19 GARY CAMPBELL: I'm sorry, I didn't catch that  
20 question.

21 SUSIE AKOOTCHOOK: Will there be impact monies  
22 for the communities that are going to be impacted that live  
23 off the sea?

24 GARY CAMPBELL: I understand that there is  
25 another part, that people are working with the communities

1 on oil/whalers agreements. So I don't know the answer to  
2 that tonight, but it is being worked --

3 JEANNE HANSON: What agreement?

4 GARY CAMPBELL: Excuse me. A conflict avoidance  
5 agreement.

6 There are people working with the AEWG in  
7 particular on conflict avoidance agreements. So what that  
8 will encompass, I don't know. I don't have that answer for  
9 you tonight.

10 Thank you, Jeanne.

11 JEANNE HANSON: This is Jeanne Hanson, National  
12 Marine Fisheries.

13 I just wanted to stress the fact that the EIS,  
14 once again, is not just for Northstar. We are looking at  
15 the entire Beaufort Sea, because what this is doing is  
16 opening up this area for oil and gas production offshore,  
17 and in particular National Marine Fisheries is very  
18 interested in what the local people have to say on what  
19 this would do to affect their lifestyles and their  
20 subsistence.

21 SUSIE AKOOTCHOOK: Okay. So you have that big  
22 drilling rig out there and eventually as the years go by  
23 there will be more popping here and there?

24 GARY CAMPBELL: I have no knowledge of any other  
25 prospects that will be developed at this time, but there is

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always that possibility. BP does not have any other plans  
2 other than Northstar for that area.

3 SUSIE AKOOTCHOOK: But that is a possibility.

4 GARY CAMPBELL: I would assume, yes, that is a  
5 possibility.

6 TIM JENNINGS: There is a map over here that  
7 shows the oil and gas leases that you might want to take a  
8 look at during the break. It doesn't mean necessarily  
9 because there is a lease that there will be production  
10 there, but it does indicate currently where the interest is  
11 by a lease being held, and so you can get an idea of  
12 perhaps the potential along the coast.

13 And that is one thing that we will do our best  
14 to take a look at in this EIS process is, because of this  
15 technology, if it goes forward and if it is proven, it  
16 could, as a reasonable person might expect, lead to other  
17 development. So that's a big issue.

18 SUSIE AKOOTCHOOK: I will comment another time,  
19 too.

20 TIM JENNINGS: Thank you.

21 Would you like to take a short break and come  
22 back? How about that? We have got some fruit and some  
23 cookies.

24 FENTON REXFORD: I would like to continue.

25 TIM JENNINGS: You would like to continue?

okay.

FENTON REXFORD: Unless some other folks want to  
3 break.

4 I think the effects on the subsistence lifestyle  
5 will be greatly affected after seeing the Exxon Valdez oil  
6 spill. In particular the crustaceans, the crab, the  
7 shellfish, the lower food chain are being depleted or they  
8 are gone, is what I am hearing from the Kodiak fishermen,  
9 Cordova, the people near Valdez. There is no more  
10 crabbing, no more shellfishing, and that is the lower part  
11 of the -- what should I call it -- the cycle.

12 From crustaceans, the shellfish, and then the  
13 ugruk is the one we really depend on. They eat the clams,  
14 the other foods to survive there. And that will greatly  
15 affect what we will live on, those smaller animals,  
16 shellfish, the smaller fish, which the fish depend on. The  
17 shrimp, those kind of things are all tied into the whale  
18 and the ugruk.

19 And there are alternative resources down in the  
20 Southcentral part for salmon fishing or commercial fishing  
21 This we do not do here on the North Slope. It's our life.  
22 We depend on the seal oil. How could we live without the  
23 seal oil, the whale oil? Those are very -- I mean it's  
24 everything. The shellfish, crabs, those are already gone.  
25 And our next, the next line above that are the seals or the

otters down there, and the ones we depend on are those, the  
2 seal and the bearded seal, and most importantly the whale.

3           If there is an oil spill out there, it will kill  
4 off all those shrimp, the crab, those phytoplankton, they  
5 will all be affected and we won't have anything to live on  
6 and we will be heavily -- it will be the end of our  
7 lifestyle which we have been living on for many, many  
8 thousands of years. And to go offshore and produce is good  
9 for your stockholders; and this will definitely be a very  
10 serious impact on the little lower phytoplankton, the lower  
11 part of the smaller animals out there, so...

12           The other thing, the other question I have is  
13 could you not produce that unit from the southern edge of  
14 the lease of the Northstar Unit? The most southern part of  
15 that unit, could you not go in the middle and get all the  
16 oil and use directional drilling from the edge, the  
17 southern edge nearest the coast? Would that be an  
18 alternative, closest to the shore, and produce the oil out  
19 there?

20           Thank you.

21           TIM JENNINGS: Thank you.

22           MERYLIN TRAYNOR: My name is Merylin Traynor and  
23 I have some questions.

24           TIM JENNINGS: Could you speak up a little  
25 louder? I'm sorry, I can't hear you because of the machine

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over there.

2 MERYLIN TRAYNOR: My name is Merylin Traynor and  
3 I have some questions.

4 I am wondering about the pipeline, at what  
5 temperature is that going to be buried and what temperature  
6 is the oil going to be flowing through there, and what will  
7 it do to the seafloor and the area that it's running  
8 through?

9 GARY CAMPBELL: The information we have now is  
10 that it is a nonpermafrost area out there where the  
11 pipeline would be buried, and the oil would be around 150  
12 degrees. We don't have an exact number but it would be  
13 warm oil, not cold oil.

14 MERYLIN TRAYNOR: So it would radiate out into  
15 the sea bottom and warm that section of the sea bottom?

16 GARY CAMPBELL: There will be some transfer of  
17 heat from the oil through the pipeline to the seabed, but  
18 the ocean is so big that the heat would be dissipated  
19 relatively quickly. But yes, there would be heat given  
20 from the pipeline to the surrounding, surrounding the  
21 pipeline.

22 MERYLIN TRAYNOR: I guess another question.  
23 They have oil, I guess drilling in the Beaufort Sea in  
24 Canada, and I wonder what happened over there and what  
25 their studies show. And I assume they don't have a



1 pipeline. How do they move that? How do they move their  
2 oil?

3 GARY CAMPBELL: There is one small development  
4 over there, Pan-Canadian or Pan-Arctic, I'm not sure which  
5 company, and they actually have a short section of buried  
6 pipeline, but most of the production that they had was then  
7 floated on a buoyed pipeline out to a ship, and so it was  
8 only done during the summer season. So they don't have  
9 year-round production there. It was a test case that they  
10 did. I believe -- although they haven't reported the  
11 reserve, I believe the reserves are quite small and so it  
12 didn't justify the cost for a year-round type production.

13 TIM JENNINGS: Do you know how long the short  
14 pipeline was?

15 GARY CAMPBELL: No, but I can certainly talk to  
16 some people that I know in Calgary and try to get that  
17 information.

18 TIM JENNINGS: I thought today somebody from  
19 Intech mentioned 2,000 feet. Does that sound --

20 GARY CAMPBELL: Yeah, that sounds right. It was  
21 not a very long pipeline. It was meant to test a lot of  
22 stuff, and they were quite successful. They actually had a  
23 bundle of pipelines put together. I don't have details but  
24 I can certainly get some information on that.

25 MERYLIN TRAYNOR: Yes, I know that they have

1 done oil over there -- I guess back in the '70s?

2 GARY CAMPBELL: Yes, late '70s.

3 MERYLIN TRAYNOR: So there must be a large  
4 amount of information available from that area.

5 GARY CAMPBELL: Yes. The people that are  
6 designing our pipeline are very, very familiar with that.  
7 In fact, two of the gentlemen that I know of that actually  
8 worked on that pipeline design, they are also working on  
9 this pipeline design. So the people that have that  
10 experience, direct working experience, are applying that to  
11 this project.

12 MERYLIN TRAYNOR: I guess at the same time I am  
13 very aware of how much comes from the sea here for  
14 subsistence, such as birds, bearded seals, seals, fish,  
15 whitefish, char, plus the whales, and the sea life here is  
16 very important to this village and it is very important  
17 that we look at that.

18 GARY CAMPBELL: Thank you.

19 TIM JENNINGS: Thank you.

20 LON SONSOLLA: My name is Lon Sonsolla.

21 The map you've made up there has a large chunk  
22 of ice there apparently which builds up through the winter  
23 30 plus meters. Is there some research that has been done  
24 on the effects of that moving along the bottom of the  
25 seabed or is that something you are studying during this

process?

2                   GARY CAMPBELL: It's something that is being  
3 studied, but I can share some of the information that I am  
4 aware of.

5                   There is gouging up to two feet. A lot of it is  
6 a lot less than two feet. The deepest that we have been  
7 able to measure is two feet, a lot in the one-foot and less  
8 range at the 35-foot or 39-foot, 40-foot water depths. You  
9 have to get quite a bit farther out before you get anything  
10 deeper than two feet in terms of ice gouging along the  
11 bottom of the ocean. So we have a fair amount of that, and  
12 that is also something we are studying as time goes.

13                  LON SONSOLLA: I guess you feel comfortable with  
14 the 10-foot buried depth then.

15                  GARY CAMPBELL: Yes, we feel that has almost a  
16 hundred percent conservative design in it. The gouge is  
17 about two feet into the bottom of the ocean, and as an ice  
18 goes through, it actually compressed the soil a little bit,  
19 so the measurements we have suggests that it is another two  
20 feet that gets compressed below the bottom of the ice  
21 gouge, so like a total of four feet that is affected by the  
22 ice going over there, and we are planning to put the pipe  
23 at ten feet. So we are doubling that, plus some, in terms  
24 of where we are placing the pipeline.

25                  LON SONSOLLA: Thank you.

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HERMAN AISHANNA: I think you will have a more  
2 lively audience in Nuiqsut tomorrow.

3 GARY CAMPBELL: Last May we had a lively  
4 audience and so, yes, I expect we will have a lively  
5 audience tomorrow as well.

6 FENTON REXFORD: Let me just further touch up on  
7 that the sea life here, that is our -- that is how we live.  
8 We are called tagiugmuit, t-a-g-i-u-g-m-u-i-t, which  
9 literally means we live out from the seas, and that is our  
10 life. And we have nunamuit, and those are the guys from  
11 inland. So anything that we take from the sea is what is  
12 meant, why we are here today. If it wasn't for our sea  
13 life or depending on the sea, we would have a heck of a  
14 time. So, again, I just wanted to touch on the sea life  
15 and literally define what tagiugmuit means, and if there is  
16 an oil spill it will definitely be a major impact.

17 Thank you.

18 ISAAC AKOOTCHOOK: And, again, I am Isaac  
19 Akootchook.

20 And this piece of paper, I can mail it to you,  
21 right?

22 GARY CAMPBELL: Yes.

23 ISAAC AKOOTCHOOK: And after we have a meeting,  
24 maybe something else going to come up again. Maybe I will  
25 put a little thing, too, what I remember now.

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And, again, if you start work on that, how are  
2 you going to do that, right under the ground, under the  
3 water?

4 GARY CAMPBELL: How are we going to do it?

5 ISAAC AKOOTCHOOK: Yes.

6 GARY CAMPBELL: We intend to cut holes in the  
7 ice and then use long backhoes to lift the soil from the  
8 ocean bottom on to the side, and then follow along with a  
9 pipeline that kind of snakes into the trench. We will then  
10 put select backfill on top of that pipeline and then the  
11 native soil back on top of the backfill. And kind of dig  
12 it, putting pipe in, select backfill, and then the native  
13 soil on top of that.

14 ISAAC AKOOTCHOOK: This is going to be in the  
15 wintertime?

16 GARY CAMPBELL: Yes, it will have to be done in  
17 the wintertime. We will thicken the ice to about eight  
18 feet so that it is safe for men and equipment to be out  
19 there, and do it all during the wintertime. Like right now  
20 we have a test trench operating to test the equipment out,  
21 so it will be this time of year. Hopefully we would be  
22 finishing up about this time of year when we build the  
23 pipeline.

24 ISAAC AKOOTCHOOK: The ice thickness all the way  
25 from the West Dock all the way down, it's always pretty

1 solid or does it have underwater?

2 GARY CAMPBELL: Some of it will have to be in  
3 water below the ice, but between the barrier islands and  
4 the coast we expect that the ice will be grounded to the  
5 sea bottom, so when we pick the ice out we will be able to  
6 dig just almost like on land. But once we are past the  
7 barrier islands, we will have to dig with water there all  
8 the time.

9 ISAAC AKOOTCHOOK: Well, we will see somehow.  
10 Don't forget us, to look at it what it looks like.

11 GARY CAMPBELL: Yes. Unfortunately we had some  
12 of the Barrow and Nuiqsut people with us today viewing this  
13 trench. I am sorry that you weren't able to join us. I  
14 wish you could have.

15 ISAAC AKOOTCHOOK: I would like to see that.

16 TIM JENNINGS: You might mention that there were  
17 some videos taken of the test trench.

18 GARY CAMPBELL: Yes. We will send you a video.

19 TIM JENNINGS: And it might be good to make that  
20 available to all the communities.

21 GARY CAMPBELL: Isaac, should we send it to you?  
22 Send the video --

23 TIM JENNINGS: Or to the mayor?

24 ISAAC AKOOTCHOOK: Everybody will see that.

25 TIM JENNINGS: And that will show the test

1     trenching that is ongoing right now.

2                 ISAAC AKOOTCHOOK:   And again another one is the  
3     seals and fish habits while you are working, we would like  
4     to see the report.   Those animals, the fish, seals, birds,  
5     whatever.

6                 TIM JENNINGS:   You might explain the test trench  
7     for folks here that might not be aware of it -- you had two  
8     sections, and the distance that you've dug.

9                 GARY CAMPBELL:   I'll draw a little bit on my  
10    memory here.

11                We had two sections that we were testing, one  
12    inside the barrier islands here kind of up the coast from  
13    West Dock near Stump Island.   We dug down, and there is  
14    about four or four and a half feet of ice.   We picked the  
15    ice out, set it on the side, and then with a backhoe dug  
16    down about another four feet to test the soils.   A lot of  
17    it was very, very silty.   And then we spread those soils  
18    out farther in the four-foot water range outside Stump  
19    Island, so that in the spring when it melts, it will kind  
20    of redeposit on the bottom of the ocean.

21                The other test trench is somewheres out in this  
22    area here just to the north of Stump Island, and I think we  
23    had about a thousand foot of trench dug there through the  
24    ice.   We had first -- about a month ago we were out  
25    spraying water on top of the ice to thicken it so that it

1 would be safer for men and equipment, until we had about  
2 eight feet of ice. We then went in with a Ditchwitch and  
3 cut ice into cubes, and then with a backhoe lifted these  
4 ice cubes out and moved them to the side. And then we had  
5 a platform across the slot in the ice, and with the backhoe  
6 reached down and again trenched through the water. So on  
7 the test trench outside of Stump Island we are actually  
8 working in water all the time.

9 THOM FRANK: How deep was the water there?

10 GARY CAMPBELL: I believe there was about 10 to  
11 12 feet of water where they were digging.

12 THOM FRANK: What will you do when you get into  
13 40 feet of water?

14 GARY CAMPBELL: It will be essentially the same  
15 technique. The current equipment that's on the Slope will  
16 only reach to about 17 feet, so we will have to get longer  
17 arms on the backhoes, which will also require smaller  
18 buckets, one-cubic-yard buckets, because of the extra  
19 weight, but it will be the same technique backhoeing it.

20 THOM FRANK: A total of 60 feet? Eight feet of  
21 ice and 40 feet of water and a 10 or 12-foot trench?

22 GARY CAMPBELL: Yes.

23 THOM FRANK: With a backhoe?

24 GARY CAMPBELL: Yes.

25 THOM FRANK: A four-yard bucket?



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1                   GARY CAMPBELL: It's going to take quite a --  
2   it's going to take longer obviously when we are near the  
3   island to dig that trench. Here they were digging trench  
4   on the inside -- on the inside of the island they were  
5   digging trench something like 400 feet in an eight-hour  
6   shift. Outside Stump Island I think they were talking --  
7   was it 150 feet in eight hours? It was quite a bit less.

8                   TIM JENNINGS: I think I heard ten feet every 30  
9   minutes.

10                  GARY CAMPBELL: Something like that.

11                  TIM JENNINGS: Does that sound about right?

12                  GARY CAMPBELL: Yes.

13                  THOM FRANK: What will the backfill do when you  
14   drop it through 40 feet of water?

15                  GARY CAMPBELL: Well, we are putting -- that's  
16   why we are putting select backfill, which is more of a  
17   gravel composition, immediately after we put the pipe  
18   down -- what we call select backfill, so it's a larger  
19   gravel. That way it will sink to the bottom and help  
20   stabilize the pipe in the trench as we go.

21                  The soil types outside of Stump Island were  
22   silty and sandy. I expect some of the silt will kind of  
23   dissipate and float to the side. With the select backfill  
24   though we expect it will have a bit of a mound over the  
25   trench when we are done because we are actually filling in

1 more than we took out because of the select backfill. So  
2 while some of it may dissipate to the side a bit, we expect  
3 that we will still have a bit of a mound.

4 There are pictures in the back as to what we  
5 expect we will see there, if you want to take a look during  
6 a break or at the end. So it will sink, but some of it may  
7 go to the side.

8 One thing that they did note while they were  
9 doing the trenches was they measured water currents  
10 underneath the ice in terms of issues exactly like you are  
11 asking, and there was very little water movement, so it  
12 should settle down pretty much right over the trench once  
13 they drop it back in.

14 THOM FRANK: How are they monitoring that when  
15 they backfill the pipe? Since you can't visually inspect  
16 it, will there be television cameras or some way to inspect  
17 that?

18 GARY CAMPBELL: Sonar is what they have been  
19 using to keep track of the profile of the ditch as they  
20 have been digging it out because it sloughs in on the side  
21 as they dig it. So they have to keep digging until the  
22 angle of repose essentially is stable so that the trench  
23 bottom remains open. They will probably use sonar as they  
24 are filling back in to determine when they have the trench  
25 filled back in.

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1 I have not heard of them using underwater video  
2 cameras. That is certainly something I am going to write  
3 down as soon as I sit down, if that is an option. That  
4 might be an interesting way to monitor what is happening as  
5 we are going. That's a good idea.

6 GEORGE PAULSBERG: Don't you anticipate stronger  
7 currents when you are in 40 feet of water versus only five  
8 to ten feet of water?

9 GARY CAMPBELL: I don't know whether they are  
10 measuring them this time or not, but I expect that there  
11 probably would be stronger currents the farther out we go.  
12 But I don't have an answer to that. It's certainly a  
13 question that I will ask them.

14 GEORGE PAULSBERG: Have you noticed any problems  
15 when the wind blows as far as the water height and  
16 activities in the cut trench?

17 GARY CAMPBELL: They haven't been out there very  
18 long, but I think not. There were no comments or no  
19 concerns raised with that. What seems to happen is there  
20 seems to be kind of slush form on the top of the water and  
21 that kind of stabilizes it, if you will. And it's about  
22 six inches or so below the ice level, is where the water  
23 rose up to, so there's about six inches in there and it was  
24 more of a slushy compound than open water.

25 TIM JENNINGS: Excuse me just a moment.

1           For the benefit of the record and for us -- both  
2 of you have been asking good questions -- could you please  
3 identify yourselves.

4           THOM FRANK: My name is Thom Frank.

5           GEORGE PAULSBERG: My name is George Paulsberg.

6           TIM JENNINGS: Thank you.

7           Mr. Frank, you were going to continue?

8           THOM FRANK: The select backfill, what size and  
9 how will that actually be placed?

10          GARY CAMPBELL: It will be brought from probably  
11 the gravel pit site in Kuparuk there, the Kuparuk Delta,  
12 and brought out in just dump trucks and put along the side  
13 and then bladed in. Pretty traditional in terms of  
14 backfilling.

15          THOM FRANK: Has that technique been used  
16 before?

17          GARY CAMPBELL: We haven't put an offshore  
18 pipeline out there, so no..

19          THOM FRANK: I mean anywhere else, a buried  
20 pipeline regardless of whether it's --

21          GARY CAMPBELL: In terms of a water river  
22 crossing, the Norman Wells pipeline in Northwest  
23 Territories, Canada, that is a method they used when they  
24 did the river crossings. And that was in very strong water  
25 currents, much more than we would anticipate seeing here.

1 So yes, it has been.

2 TIM JENNINGS: Do you know, Gary, if they have  
3 used this type of trenching technique elsewhere? I was  
4 talking with somebody at Intech today and they said there  
5 is buried pipeline all over the Gulf of Mexico, the North  
6 Sea, and that they used the trenching method in those  
7 locations.

8 GARY CAMPBELL: The best example is probably  
9 parts of TAPS. And pictures -- although I have not worked  
10 on pipeline design or any of the repair design on TAPS, the  
11 pictures I have seen essentially use backhoes. In some of  
12 the river crossings in the winter that they worked on the  
13 Sag, further down towards, I guess it's Pump Station 2,  
14 they used conventional backhoes in almost the same process  
15 that we are using here.

16 In fact, people that worked on some of the TAPS  
17 redesign issues, we have been working with them. We have  
18 also had several meetings with Alyeska engineers and  
19 environmental people, specifically to take advantage of  
20 their working experience and knowledge, particularly on the  
21 river crossings on the TAPS and buried sections on TAPS,  
22 which is also a warm pipeline.

23 So it's not ocean buried, but it's buried under  
24 rivers and it's buried along the bottom of rivers in the  
25 same direction as the river, not just straight across the

1 river. So there is in-state examples, not offshore in the  
2 ocean but definitely in water, essentially the same that we  
3 are doing here.

4 JON ISAACS: I think in the North Sea, in those  
5 waters don't they use a barge with sort of a plow or a jet  
6 technique where they actually dig the trench in? How does  
7 that compare to what you are proposing, or I guess are  
8 there reasons, would that be something you would consider  
9 or had considered?

10 GARY CAMPBELL: We talked to some of the large  
11 European dredging companies that put in essentially deep  
12 water pipelines like this, and they have a plow which is  
13 very similar to a farm plow when you are cutting a furrow  
14 to turn over soil, where that might make several passes,  
15 and they drag that along behind a large ship. There is  
16 also hydraulic dredging that kind of cuts slots in the  
17 bottom using high pressure water to force the soils out.  
18 Most of those techniques require 60, 80, 100 feet of water  
19 for effective use of the ships that operate that equipment  
20 and the equipment itself.

21 So it's not really a proper or a -- it's not  
22 really an efficient use of that kind of technology and  
23 technique. We are too shallow, is kind of the paradox.

24 THOM FRANK: I guess just one more -- the  
25 difference between the buried pipeline on land and the

1 ocean is you have ways to monitor subsidence for the  
2 foundation soils for the pipeline, and would that ever  
3 affect the integrity of the pipeline?

4 GARY CAMPBELL: Yes. In fact recently, like in  
5 the last three or four years, NOWSCO has developed what  
6 they call a geo-pig, which effectively, when you run it  
7 through a pipeline, you can measure, as I call it, the  
8 longitude, latitude and the elevation of the pipeline. So  
9 the first run you would make with this geo-pig --  
10 geographic, geometric, whatever you want to call it -- pig,  
11 you effectively define where in space that pipe is. You  
12 run that pig six months or a year later and you match up  
13 where the pipe is now compared to where the pipe was when  
14 you put it in, and you are able to measure even parts of  
15 inches' movement within that pipeline.

16 So if there is some subsidence, for whatever  
17 reason, in the soils around any part of the pipeline that  
18 is causing the pipeline to move or to drop or to bend,  
19 anything, you would be able to measure that. And that is  
20 one of the main techniques that we are looking at in terms  
21 of use for this pipeline, to be able to monitor it  
22 regularly so that we can prevent any spills.

23 We will be able to detect if there is any  
24 corrosion pits in the pipeline, the same as they do with  
25 the magnetic flux pigs in TAPS, the geo-pig to measure if

1 the pipe is moving, so that if there is a concern we can  
2 shut down the pipeline and repair whatever that is before  
3 there is a spill, before there are any accidents.

4 So that is part of the design, is to be able to  
5 do all of that monitoring work to insure the integrity of  
6 the pipeline.

7 A good question, I might add. A very good  
8 question.

9 TIM JENNINGS: Mr. Rexford.

10 FENTON REXFORD: Fenton Rexford.

11 I am curious. From the island, from the oil  
12 that you are tapping, how many feet down are you going to  
13 be to connect the oil to the pipeline, at what depth, and  
14 how are you going to prevent ice gouging of the pipeline?  
15 Where are you going to start your 10-foot trench on the  
16 island?

17 GARY CAMPBELL: It would effectively be outside  
18 the toe. The island would be built and it would be sloped  
19 down to the bottom of the ocean. We would be 10 feet below  
20 even where the original seabed was. So we would come in  
21 always 10 feet below where the original seabed was  
22 regardless where the island is, and then come back up  
23 underneath the island into the facilities.

24 FENTON REXFORD: When you are going to the  
25 island, what -- are you going to do the trench first and



1 then build the island or --

2 GARY CAMPBELL: I see your question. We are  
3 going to have kind of a manhole as we construct the island,  
4 so that when we bring the pipeline in we will be able to  
5 bring it up the manhole on to the island. So when we  
6 construct the island, that manhole down to ten feet below  
7 sea level will be part of the construction of the island,  
8 and out to a spot, and we will have to put the pipe  
9 together and bring it up that on to the island. So it will  
10 be kind of like putting an outdoor water faucet as you are  
11 building the house and not connecting it or using the water  
12 until after you get all the plumbing hooked up.

13 FENTON REXFORD: So we will see those plans in  
14 the EIS?

15 GARY CAMPBELL: I don't know whether they will  
16 be part of the EIS, but if you want to see plans of  
17 construction, we will make sure that those are available  
18 for you.

19 HERMAN AISHANNA: One last question before I go.  
20 Is it worth it?

21 GARY CAMPBELL: Pardon me? Is all this worth  
22 it? Is that what he asked? I hope it is.

23 TIM JENNINGS: Well, give me some feedback on  
24 how you are feeling about the meeting. Would you like to  
25 wrap things up, or would you like to take a break, have a

1 chance to discuss any further questions and issues, and  
2 then have an opportunity to reconvene for any follow-up  
3 questions that you may have developed during the break?  
4 Tell me what you would like to do.

5 This is your meeting. We are here to hear from  
6 you and we want to make sure that we have incorporated your  
7 comments.

8 If you are going home, I would like to thank you  
9 for coming tonight. If you have any written comments, we  
10 would like to receive them from you.

11 Thank you for coming.

12 (Off record at 9:45 p.m.)

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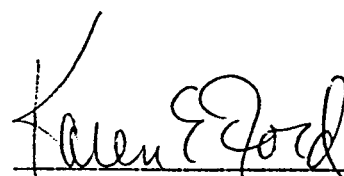
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I, KAREN E. FORD, Registered Professional  
Reporter, hereby certify:

That I am a Registered Professional Reporter for  
Alaska Stenotype Reporters and Notary Public for the State  
of Alaska; that the foregoing proceedings were taken by me  
in Stenotype Shorthand and thereafter transcribed by me;  
that the transcript constitutes a full, true and correct  
record of said proceedings taken on the date and time  
indicated therein.

Further, that I am a disinterested person to  
said action.

IN WITNESS WHEREOF, I have hereunto subscribed  
my hand and affixed my official seal this 29th day of  
March, 1996.



KAREN E. FORD, RPR  
NOTARY PUBLIC, State of Alaska



My Commission Expires July 13, 1999.